TOOL • DIE • MACHINE

PROGRESS

JIGS . . . . FIXTURES . . . . GAGES . . . . MOLDS . . . . SPECIALTIES
MACHINE SHOP PRACTICE . . . . PRODUCTION

MAY 1936

VOL 2 NO 3

Official Publication of SPECIAL TOOL, DIE and MACHINE SHOP INDUSTRY

PROGRESS Policy

Published monthly and distributed to:

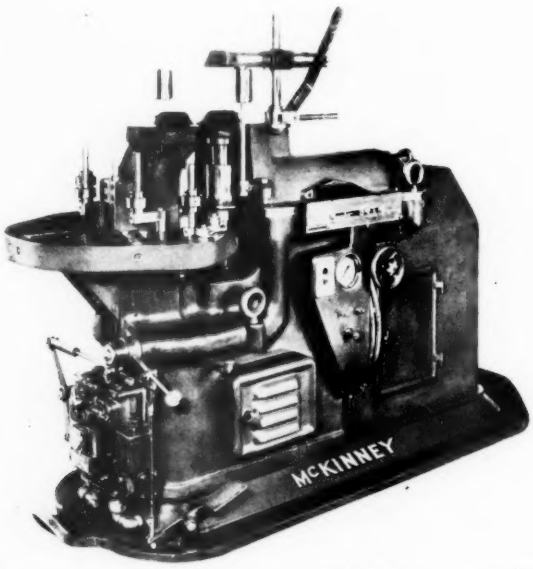
Designers and Builders of TOOLS and DIES, JIGS, FIXTURES, GAGES, and MOLDS.
Designers and Manufacturers of SPECIAL MACHINERY for Production Industries.
General Machine Shops — Manufacturers of Production Specialties.
Executives in Production Industries who are responsible for the design, development, purchase and use of TOOL and MACHINE EQUIPMENT of every kind.

Manufacturers who have a sales message for these firms and individuals are invited to place their advertisements in PROGRESS and to avail themselves of its columns for reproducing articles and illustrations which are timely, interesting and instructive to INDUSTRY.

PROGRESS advertisers are getting results. Rates are moderate.

GEORGE J. HUEBNER, *Editor.*

This unit is portable and can be moved readily to obviate the necessity of moving bulky products.



A Special Machine

FOR

BEADING AND NECKING WASHING MACHINE TUBS

Designed and Built by

THE McKINNEY TOOL & MFG. CO.

1688 Arabella Road — Cleveland, Ohio

MANUFACTURERS OF

ROLLER DIE FORMING MACHINES . . . and
SPECIAL MACHINES FOR ALL INDUSTRIES

LET US STUDY YOUR REQUIREMENTS

The Finished Product is No Better Than the Tools Which Fabricate It

This article is intended to make YOU, Mr. Tool and Die User, and YOU, Mr. Tool and Die Manufacturer, think earnestly on the most important phase of a tooling program.

BUYERS and users of fine tools are generally agreed that the best tools are the least expensive. Extreme care in designing, painstaking effort in development, and absolutely accurate manufacture unfailingly bring their reward of longer tool life and far better products.

It is an old saying that "by the work one knows the workman," but in this day and age a workman is no better than his tools, and by the same token the quality of the finished product stands in direct ratio to the tools which fashion it.

The Tools, Dies, Jigs, Fixtures, Moulds, Gages and the unlimited types of Machines which are specially designed, developed and built by the TDM Industry for practically all other industries are the products of shops in which accuracy is the watchword. Of vital consideration for the buyer are the experience of shop executives and the skill of their workmen. In the final analysis it is they who determine the quality of the Tool, Die or Machine and the satisfaction it will give in service.

The manufacture of these fine Special Tools—a collective word embracing all products of the Industry — is usually most effectually accomplished in shops which may be designated medium-size. So frequently the directing executive or the owner of the shop is the engineer—the experienced craftsman—who himself directs shop operations. Office detail and frequently sales are left to others because the all-important responsibility is accurate shop work.

It has been frequently contended by buyers and users of the Industry's products that this experience and expert knowledge of the tooling requirements of many industries is not adequately compensated, that it is lost sight of in the modern method of bid-taking and buying. There are today, among the extensive users of the Industry's products, numerous large concerns which have adopted the policy of making a selection of TDM shops in which they have confidence and placing with them orders for their Tool and Die requirements on the "time and material" basis. This largely eliminates the element of guesswork which is present in every estimate and it assures the Tool manufacturer a fair and reasonable profit. In such transactions the buyer of course has the privilege at all times of checking time and material records.

In industrial relationships there probably is no more unfortunate experience than when a bidder is awarded a contract which he cannot fulfill. At first glance, in such an instance, the bidder appears to be the only loser, but analysis proves differently. After all, a $75 hand-tailored custom-made suit cannot be sold for $25, and an artistically hand-carved walnut chest cannot be bought at the price of a plain pine box, and no one believes that the same materials and workmanship can be put into a $5000 home as into a $15,000 one. Nevertheless, in each instance the cheaper may be said to serve the same purpose as the better—the custom-made suit and the hand-me-down, the walnut chest and the pine box, the fine home and the inexpensive one. Both suits accomplish the same purpose, but the custom-made is the product of a craftsman. Made of fine materials to the measurement of the individual, it fits well and wears long. Any carpenter can nail together the four sides, top and bottom of a pine box and it will hold as much as a fine chest of the same size, but one needs only to look through the attics of the present generation and the antique shops of today to prove that these artisan-made walnut chests have stood the test of time. Again, they were made by craftsmen.

Every Special Tool, Die, Jig, Fixture, Mould, Gage and Machine made in a TDM shop is custom-built to fit the job

(Continued on page 10)

Optics in Modern Industrial Measurement

By Henry Simon, Jena, Germany

(This article was originally published in "ENGINEERING PROGRESS" of Berlin · Germany, and we reprint portions of interest to manufacturers and users of tools, by courtesy of the George Scherr Company, New York City, American representative of Carl Zeiss — Ed.)

LIKE some other great advances, optics have been relatively late to arrive in industry. In this respect, optical industrial equipment has followed the same course as, for instance, centerless grinding and the employment of electric controls in machine tools. The reasons why these inventions did not come into use sooner, were about equally divided between the lack of an urgent need for them in the earlier times, and the time required for developing and introducing them after the need had arisen. An analogous situation prevails in regard to the development of optical equipment, which, uncalled for in rule-of-thumb days, was the logical consequence of the demand for exactness. Today, optical equipment is rapidly conquering ever larger sections in the field of industrial measurement and inspection.

In contradiction to an idea still entertained in many quarters, the use of optics in industrial manufacture does not involve delicacy of instruments or the risk of complications. Quite on the contrary, a general basic characteristic of the devices to be described is the invulnerability of the optical elements to the effects of wear or disturbance, and their resultant permanent accuracy in continued use. The one former drawback in some instruments, of having to observe through an ocular, has been done away with in all cases where steady use is likely, by the provision of daylight projection giving large-scale images of extraordinary clearness.

For purposes of this article, optical measuring and gauging devices may be divided into those in which the work is registered or "spotted" optically but measured by mechanical means; contacting instruments or instruments with mechanical contact but optical measurement; and all-optical instruments, in which measurement is effected by optical means only.

Instruments with Optical Contact and Mechanical Measurement

In the instruments of this group, measurement is made by ascertaining the travel of a micrometer screw, corresponding to the shift of the image of the work relative to a hairline in the observation microscope. The "spotting" only is therefore optical, and measurement is a function of the micrometer mechanism. Though the instruments of this class are all of the precision type, they are the least exact of the three groups, due to the inherent inferiority of mechanical to optical measurement.

The *Shop Measuring Microscope* is so simple as to require little explanation. The instrument consists of a base with

(Continued on page 16)

FIG. 1. NEW MODEL TOOLMAKERS' MICROSCOPE

The templet ocular for examining contours is shown in position

"A Community of Interest"

Director of National Association of Manufacturers tells employers how to get 90% of employees to "follow them to the end of time."

ON THE first page of the Labor Relations Bulletin of the National Association of Manufacturers, issued under date of April 20th, 1936, is an article which should be read by every employer. In this article it is suggested that the best treatment for critics who contend that all employers are "exploiters" of working-men would be to have them spend some time visiting a few of our average American factories, such factories, for example, as the one managed by the N. A. M. director, who said quite recently:

"'Years ago organized labor advanced the thesis that between employer and employee there was an unpassable gulf; that each one represented a separate and distinct class, whose interests were eternally opposed to the other.

'They never have been able to sell this doctrine to the man in the shop; if they had, the closed shop would be universal, instead of being the exception to the rule. But they have quite largely sold it to the management of industry, and they have 'kidded' the men who sit in the front office into believing that the man in the shop doesn't want his advice and will react against it if it is offered.

'If the men in industry would devote a small percentage of the brains and effort toward selling their ideas to the men in their shops that they devote to the selling of their product to the public, doing this in a straightforward, clean-cut, man-to-man fashion, they would find that 90 per cent of those employees would gladly follow them to the end of time.'"

The opinion of the N. A. M. director quoted above is one which we have shared for a long time, and one which we have had the temerity to advance several times, both by the spoken and written word. In the May, 1935, issue of PROGRESS, in the article entitled, "Wage Surveys"—page 12, there appears the following:

"During the last several years, it has been proven again and again that disturbing influences in industrial areas or in particular industries are the work of small minorities. The majority of workers frequently do not subscribe to the efforts of the minority. When employers of labor recognize that they have the same opportunity to satisfy their employees and to convince them of their interest in their behalf as have organizations opposed to employers to sell them the opposite idea, then real progress will be made toward eliminating much so-called social unrest. No opportunity to point out to employees the community of interest which really exists between them and their shop should be passed up. There are many reasonable, clear thinking men among our workers and they can be made to realize that it requires cooperative effort if we would rehabilitate our Industry to our mutual benefit."

After all, these are just two ways of saying the same thing. There is nothing radical about the idea, it isn't socialistic. It seems to us to be just plain good sense.

If a manufacturing plant cannot operate without its workers, and the workers will have no jobs if the manufacturing plant does not operate, then what is there but a community of interest. Both sides will realize their greatest gain, in fact their only gain, if and when the plant operates. It should be possible for Industry to work out a plan in which this community of interest is definitely defined, then let it be sold to the men and women who are the workers in our Industrial and business establishments and there should result such cooperation between capital, management and labor as will assure entirely satisfactory profits as well as acceptable wages. Mr. N. A. M. Director says that under such circumstances "90 per cent of those employees would gladly follow them 'their employers' to the end of time."

NEW AND INTERESTING PRODUCTS

Hovis Screwlock Retainer for Punches and Button Dies

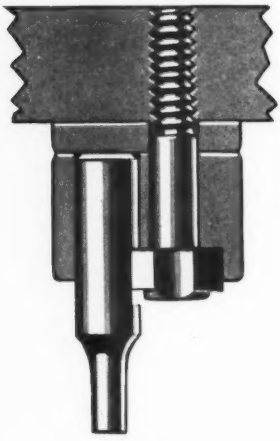


FIG. 1

A NEW method for retaining punches in individual retainers as well as in group plates has been recently developed by the Hovis Screwlock Company. Strong claims are made for its advantages:

1—Punches are really removable and just as readily replaced.

2—Punches operate without excessive lateral movement, and with practically no side thrust.

The Screwlock method is simple; the principle is illustrated above. (Fig. 1) The punch is held in place by a screw which passes directly through the retainer and into the punch shoe. This gives a direct stripping or retaining action from the punch to the punch shoe. The retainer itself then becomes a means of locating the punch and no strain is applied which has any tendency to move it.

The shoulder on the punch is at right angles with the axis and, with the use of an alloy steel screw and properly heat treated punches, this retainer will pierce and strip metal of a thickness comparable with any known method of holding piercing punches.

The retaining screw, made of heat-treated alloy steel, has a head which is maintained to a very close limit as to diameter, fitting into the counterbore of the retainer. One side of the head is milled out in order to remove the punch when the screw is revolved to the proper position. The head of the screw has a bearing directly on the bottom of the counterbore of the retainer, passing through the backing plate and securing the retaining assembly to the punch shoe. The punch is made approximately .002″ shorter from the shoulder to the end which bears on the backing plate which, when the screw is tightened, secures the whole assembly and allows a maximum of lateral movement of the punch of something less than .002″.

The retainer is made of high carbon steel and is not heat-treated. The punch hole is machined to very close limits as is also the distance from the bottom of the counterbore to the back face. It is not essential to harden this part as the piercing pressure on the punch is applied against the hardened steel backing plate and all of the stripping strain is taken against the heat-treated alloy steel screw. The retainer is also fitted with suitable dowel holes.

The punch is made of a suitable alloy carbon steel, properly heat-treated, and is guaranteed in ordinary service. High speed steel punches are made up special to order. Carbon steel punches are carried in stock in standard $\frac{1}{64}$″ sizes.

The backing plate is made from high carbon spring steel suitably heat-treated to withstand the shock of piercing.

Because both the piercing strain and the stripping action are taken on heat-treated parts other than the retainer itself, the Hovis Screwlock principle lends itself readily to group plate construction. The plate itself does not have to be hard. One setting on a jig borer will complete a group plate ready for mounting, with

the exception of counterboring for the screw heads.

The possibilities of group plate construction are illustrated in Fig. 2. This Screwlock retainer was made to hold 156 punches with ½" bodies and .400" round points.

Other advantages claimed for the Hovis Screwlock Method are:

Straight thrust and pull action with no side strain

No wedge or key parts whatever

Punches are easily shop made with a straight side cut

Present punches can be readily salvaged

Quickest change of punches

Partial turn of screwlock with standard socket wrench really releases punch.

The Hovis Screwlock Company is located at 3129 East Larned Street, Detroit, Mich.

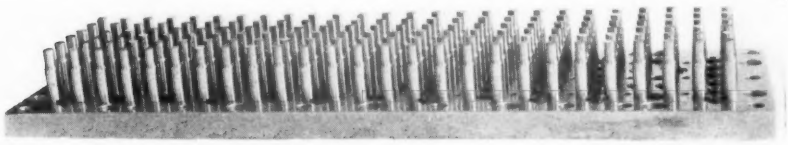


FIG. 2

Hovis Screwlock Retainer containing 156 punches—with body diameter of .500" and piercing diameter of .400" each. Punches are spaced equally 1" in each direction. This special retainer is being used by one of the world's largest manufacturers of radiators for producing radiator core tank bottoms. The Hovis principle makes possible the removal of one or more entire rows of punches, thus radiators of different sizes can be made with the same piercing die.

Lathe Instruction Booklets

The South Bend Lathe Works, 458 Niles Avenue, South Bend, Indiana, sends us two interesting new booklets entitled, "How to Grind Lathe Tool Cutter Bits" and "How to Cut Screw Threads." These are available to PROGRESS readers.

Many illustrations accompany the descriptions, and the material is presented in easily understandable form.

The South Bend Lathe Works operate about 60 back-geared, screw-cutting lathes on all kinds of machine work, and the methods described and illustrated are those used in its own shop. These booklets may be considered almost as textbooks and they are intended to instruct the quite inexperienced. The booklets may be obtained from the company by mentioning this magazine and remitting the nominal amount of ten cents to cover handling and postage.

FIRTHITE CEMENTED CARBIDE TOOLS

We Design and Fabricate All Types: Standard, Semi-Standard, Special and Particular.

ALL TOOLS FINISH-GROUND ON DIAMOND WHEELS

Copper Brazing Service • *Prompt Delivery* • *Standard Tips in Stock*

LYONS MACHINE COMPANY

5601 TILLMAN AVE. WOodbine 2440 CLEVELAND, OHIO

Development of the Double End Mill

THE use of fast spiral, shear cutting, double end mills is a comparatively new development in the field of milling. In 1918 The Weldon Tool Company of Cleveland produced the first double end mills on a commercial basis. These mills did not have more than the ordinary spiral common to the familiar taper shank mill. The fast spiral, shear cut mill evolved later.

The double-end principle proved popular, for with a single shank for two end mills, Weldon was able to sell a mill the initial cost of which was considerably less than that of two single mills of equal size. Furthermore, the convenience of the Weldon mill was of great importance; a Weldon mill did not stick in its holder when the operator wished to change end mills.

The double end mill is secured in the Weldon holder by a specially shaped set screw which fits into a flat on the shank of the end mill. When desirable to change the mill, the operator merely loosens the set screw, removes the mill and reinserts the other end or another mill of the same size shank. All this takes but a few seconds and no hammer is necessary. True running characteristics of the Weldon holder are obtained by holding to exceedingly close tolerances in manufacturing, tolerances so close that chips cannot get between the mill and the holder. No mill can be inserted in its holder as long as chips or dirt remain in the hole; if the hole is dirty, the operator either forces the dirt back into the holder as he inserts the mill or is forced to wipe out the dirt. Nor does the set screw push the mill to one side to cause runout; construction of the holder obviates this possibility.

Retention of the mill by a set screw offered further possibilities. It was found that the spiral of the end-mill flutes could be increased without the risk of the mill's corkscrewing out of the holder. The spiral on Weldon end mills was gradually increased until the present fast spiral with its rapid, shear cutting action was attained in 1925.

Since then other improvements have taken place, such as hollow grinding on the flutes to eject chips as rapidly as possible and double back-off to increase the life of the mill and to reduce chatter. The Weldon Tool Company has installed the finest heat treating equipment obtainable for its tools and has secured the services of a metallurgist highly trained in these tools to insure proper heat treatment. Experimental work continues today to improve Weldon end mills.

Eastman Kodak Uses Foley Die Making Machine

The Foley Manufacturing Company, manufacturers of the Foley Die Making Machines, request mention of the experience of the Eastman Kodak Company of Rochester, N. Y. A Foley Die Making Machine in their Tool and Die shop has been of particular advantage to them in its adaptability to accommodate material up to 3″ in thickness and to saw to the center of a 13″ piece.

The Foley uses all types of standard and special files, from the smallest needle file to the coarsest bastard file, without special holding fixtures.

Licensed by "Firthite"

The Lyons Machine Company, 5601 Tillman Avenue, Cleveland, Ohio, is now a manufacturer of FIRTHITE Cemented Carbide Tools.

Jack L. Lyons, a graduate Mechanical Engineer, personally supervises all design and fabrication. All types of tools are manufactured, including standard, semi-standard, special and particular. An exceedingly important feature is that all tools are finish ground on diamond wheels. This is said to assure longer service of the tools. Standard types of tool tips are carried in stock for prompt fabrication and delivery.

A. P. Schraner & Company Make Lapping Machines

PROGRESS regrets that the listing of this well-known firm in the Directory of Cleveland Shops—April issue—showed it to be a manufacturer of Tapping Machines. It should have been LAPPING MACHINES, a mistake of just one letter but—"what a powerful important letter that was."

---

35 Years Experience

The Illinois Testing Laboratories, Inc., of Chicago, is one of industry's oldest manufacturers of temperature-indicating equipment. Thirty-five years' experience enables this company to manufacture and sell the "ALNOR" line of indicating Pyrometers at exceedingly moderate prices which are particularly evident when their exceptional quality is taken into consideration. "ALNOR" Pyrometers are made for all types of service.

Mauser Toolmaker's Caliper *with micrometer adjustment.*

A masterpiece of fine toolmaking. . . . Guaranteed accurate measurements to .001".

This and other types, with or without height gauge attachment, also knife-edge straight edges with insulation holder, can be furnished promptly from stock at attractive prices.

Write for our free 12-page catalog today.

GEORGE SCHERR COMPANY
128 B Lafayette St., New York, N. Y.

SPEEDY, ACCURATE

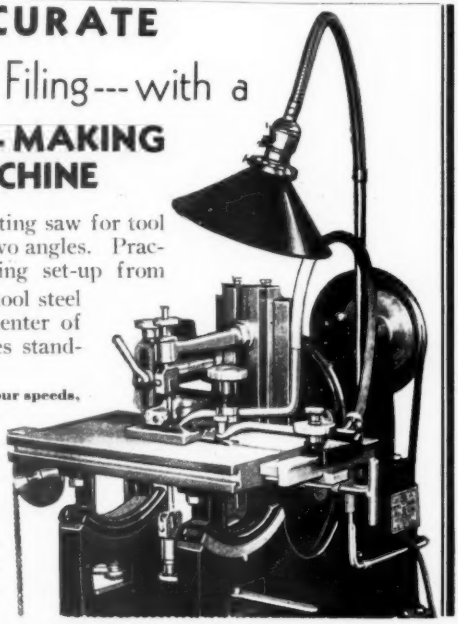
Die Sawing and Filing---with a

FOLEY DIE-MAKING MACHINE

Fastest reciprocating metal cutting saw for tool steel. Saws to any corner at two angles. Practically no time lost in changing set-up from sawing to filing. Cuts hardest tool steel up to 3" thick, and saws to center of 13" piece. Takes any saw, uses standard files.

Adjustable positive feed saw guide, four speeds, adjustable table and ram. ¼ h. p. motor handles heaviest work.

Write for illustrated circular and price



FOLEY MFG. CO.

50 Main Street, N. E. Minneapolis, Minn.

Also makers of Foley Automatic Saw Filer and Foley Automatic Hack Saw Grinder.

The Finished Product is No Better Than the Tools Which Fabricate It

(Continued from page 3)

for which it is intended. It should never be a rush job because the care that is exercised, the degree of skill with which it is made, the absolute accuracy of its dimensions, determine its life and the quality of the products it turns out. Truly, "the best is none too good." Usually the original tooling cost for a new product, or a new model, distributed over the ultimate output of the product, is a comparatively small percentage of the aggregate cost. However, it is remarkable how frequently unthinking buyers will place before everything else the "price" of the new Tools. It's the quality and workmanship which are important, not the price. A sheet metal Die which leaves a lot of grinding to be done, a tool which leaves jagged edges—these add the cost of another handling and machining to every piece. So often a few more hours added to the time of manufacture of a Tool or Die turns out to be the most certain insurance against such fault or failure in production. To risk "quality" by trying to save a few dollars often turns out to be palpably "penny-wise and pound-foolish."

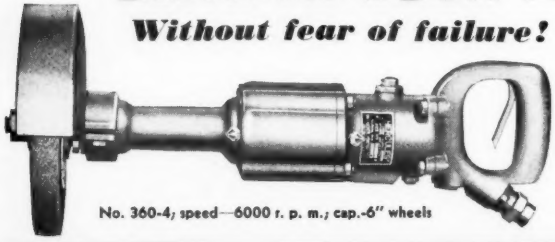
Earlier in this article it was stated that a contractor who bids too low seems to be the only loser. When such a contractor, be he a production manufacturer, a house-builder or a Tool Shop owner, gets into a job and finds that he is destined to suffer a loss, he is confronted with a terribly realistic problem. It has not only its financial aspect, but also its moral. Why should it be denied that in such a situation the contractor feels as though he has been licked? Truly, he has to be exceptionally courageous to finish that piece of work with the same intense interest and conscientiousness with which he began on it. From the financial angle, however, he is not the only one who will lose. Oftentimes the buyer, under such circumstances, detecting this unfortunate state of affairs, and after vainly attempting to obtain delivery has found it necessary to take the job to another shop for finishing. This consumes time and the new product or the new model has to wait, each day of delay adding to its ultimate cost.

In a recent instance, Dies which were taken from a shop under circumstances similar to the foregoing were turned over to a competitor with instructions to finish them on a "time and material" basis, with cost no longer an object. The manifest unfairness of this is inescapable. The moral is not so much that the original Tool Shop suffered a severe loss, but that the buyer's loss in the non-production of the product for which the Tools or Dies were intended suffered a loss several times as great.

Truly, in the buying of Tools, Dies, Jigs, Fixtures, Moulds, Gages and Special Machines, there is no substitute for quality, and the ability to deliver an assuredly satisfactory product should be far more important to the buyer of it than its price.

DEDICATED to DUTY . .

Without fear of failure!



No. 360-4, speed—6000 r. p. m.; cap.-6" wheels

HERCULES

A general purpose pneumatic grinder that has proven its worth in thousands of shops, on thousands of tasks. Same design available in wide range of sizes.

THE BUCKEYE PORTABLE TOOL CO.
Dayton, Ohio, U.S.A.
Representatives in Principal Cities

Please mention PROGRESS when writing advertisers.

What About Business For The Balance Of This Year?

THIS is a presidential election year. From time immemorial the general opinion among business men has been that this brings extreme dislocation of business activity. From every man's viewpoint, this is highly undesirable and we are glad to be able to pass on, therefore, the opinion of a keen Washington observer. W. M. Kiplinger, for whose Washington Letter your Institute is a subscriber, states:

"On the basis of our general observation, plus reports from many lines, we believe this fear is exaggerated."

The determining factor as to how good business really is, is the velocity with which money travels. If it comes out of the bank and goes into the purchase of homes, radios, and automobiles, and all of the other manufactured products and commodities, then its distribution brings wages and dividends to many. They in turn spend it for similar needs or luxuries, as the case may be, and again there are sales and profits and wages. Link upon link the chain is forged, and if there are no breaks, no interruptions, the movement of money accelerates and prosperity increases.

Difficult as it is for many of us to justify the payment of the soldier bonus, the fact remains that business and industry will be greatly benefited therefrom. There has been a more-than-normal demand for merchandise of many kinds and as a result production in those lines has been high during April and May, and Kiplinger believes it will be sustained through June.

Other cash which will be moving during August and September are the payments to farmers under A.A.A. programs. It cannot be denied also that Work Relief funds are helping industry. Products of all kinds are required for construction work, and as a result, men are working in the making of those products. Again cash is flowing.

Prospective tax legislation is exceedingly disturbing and probably most of those who make profits will have to pay a large percentage of them back to government, but after all, funds have traveled, and in their travels have supported families.

There is every indication, despite political disturbances, that business will continue to show genuine improvement between now and November. In many lines production is going forward, although some plans for longer-range expansion are being held up until after the elections.

Kiplinger makes another significant statement: *"Big rise in business seems probable after election, regardless of who wins, because some of the uncertainty will be ended. It may be a minor boom."*

Thus, it may even happen if business momentum is great enough, that those who wait to make their long-range expansions may find shortages of materials and labor.

The good old U.S.A. has lived through every election to date and we are betting that it will survive this one.

HELLER **NUCUT** FILES

Patent No. 2027039

A distinctly new file made by a company with 100 years experience behind them. Its patented features are a combination of high and low teeth with staggered overcut thus insuring you a faster cutting and smoother finish. Uniformity is guaranteed by heat treatment in special electric furnaces. TRY A FEW AND BE CONVINCED.

DISTRIBUTED BY

THE WHITE TOOL & SUPPLY COMPANY

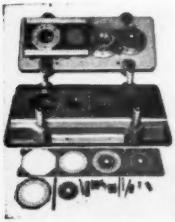
1317 WEST 6TH ST. MAin 0235 CLEVELAND, OHIO

LOOKING FOR THE NEEDLE IN THE HAYSTACK

. . . . . is just about as
a job as trying
without using

DANLY DIE SETS SAVE YOU MONEY

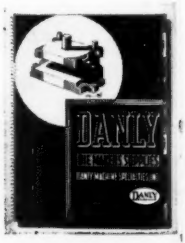
DANLY QUALITY



● Danly Die Sets are more accurate — give more accurate parts — and greater production per die before re-grinding.

A typical example of Danly's long-lived accuracy is furnished by this four-stage progressive die producing one stator and one rotor blank at each stroke of the press. It has furnished 4,629,200 of them at the end of the 27th regrind. An average of 171,452 of both stator and rotor blanks per grind.

DANLY CATALOGING



DANLY DIE SETS AND D

out as hard
trying to cut die set costs
using DANLY DIE SETS

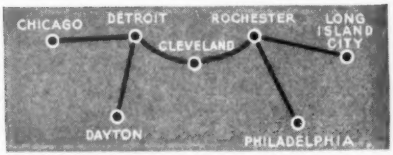
NEY IN THREE WAYS

ILY
OGING

● From Danly's unlimited number of possible combinations of die set size, thickness and material of shoe and punch holder, bushings and length of pin—you select the die set ideally suited to the job in hand—*faster*—because the new Danly Catalog is easier to use and more complete than any other listing of its type.

Write the Danly Branch Plant nearest you for your copy of this great new catalog and full details on its most profitable use.

DANLY DISTRIBUTION



● *Faster* delivery of *better* die sets at lower final costs is offered the manufacturers in each of these 7 districts by the unique Danly Distribution Plan. Danly maintains a complete stock—and an assembly plant—at each of these strategically located points. Each one is equipped to meet any die set requirement—TO SHIP WITHIN 24 HOURS—an unlimited number of possible combinations of Danly Standard Die Sets.

❖

Danly Machine Specialties, Inc.
2121 S. 52nd Ave., Chicago, Ill.

BRANCHES:

Detroit, Mich.....1549 Temple Avenue
Long Island City, N. Y.....36-12 34th Street
Cleveland, Ohio.....1444 E. 49th Street
Dayton, Ohio.....114-116 N. St. Clair Street
Rochester, N. Y.....16 Commercial St.
Philadelphia, Pa.....3913 N. Broad St.

DIE MAKERS' SUPPLIES

TOOL DIE MACHINE

PROGRESS

Official publication of the

SPECIAL TOOL, DIE AND MACHINE SHOP INDUSTRY

3500 Members in the U.S.A.

Please send contributions to
GEORGE J. HUEBNER, *Secretary*

Special Tool, Die and Machine Shop Institute
P. O. Box 3561, Cleveland, Ohio

Vol. II, No. 3 May, 1936

Progress Continues to Grow

IT IS with much satisfaction and a degree of justifiable pride that we call attention to another increase in the size of PROGRESS. In March there were sixteen pages, in April twenty, and this issue is twenty-four.

The circulation in March was 3500, in April just short of 6000, and this issue will reach more than 6000—2500 of whom are customers of the Industry.

We sincerely hope that PROGRESS readers will agree that their magazine is improving also in reading-content. The volume of advertising is stepping up each month and of course it is this which makes possible a bigger book.

A great source of satisfaction, however, is that advertisers continue to report results. One inquiry from a PROGRESS ad holds promise of being converted into an order which should exceed $20,000.

There is no question but what PROGRESS can be developed into an extremely interesting and valuable publication for the members of our Industry. With its circulation being expanded to include the firms and executives who buy our products, there is the opportunity to present facts about our Industry and its products. This may be done not only by means of interest-holding articles, but also descriptions of new products and specialties, as well as individual and group advertising.

TDM PROGRESS can help the whole Industry make progress. All it needs is cooperation.

Hudson River Valley Division of the T D M Institute Holds Annual Election

MEMBERS of the Hudson River Valley Division of the Special Tool, Die and Machine Shop Institute held their annual meeting on Tuesday evening, April 14th, at the Hotel Pennsylvania in New York City.

Sidney Diamant was re-elected president, B. B. Beck was re-elected secretary and treasurer, while Fred C. Danneman is the newly elected vice-president.

Mr. Diamant is president of the Diamant Tool & Mfg. Co. of Newark, New Jersey; Mr. Danneman, president of the F. C. Danneman Company of New York City; and Mr. Beck, president of the Mechanical Die & Tool Company of Brooklyn, New York.

Other business transacted at this annual meeting of the Division included reports of officers and plans for the forthcoming year. The officers expressed the hope that a continually increasing number of Industry shop owners and executives would realize the benefits to be derived from regularly attending meetings at which Industry problems and activities are discussed.

WANTED

POSITION WITH TOOL AND DIE SHOP OR PRODUCTION MANUFACTURER.

Experience:
4 years actual Tool and Die making
5 years supervising production
18 years manager Tool and Die Shop with capacity 100 men.
Am experienced in estimating and selling, and acquainted with sources for work.
Compensation to be determined from results.

Address: PROGRESS
P. O. Box #3561, Cleveland, Ohio

WANTED

A TOOL SHOP PRODUCT

to manufacture. Must be of proven value —not merely an idea.
Can obtain capital.

Address: PROGRESS
P. O. Box #3561, Cleveland, Ohio

SPECIAL TOOL, DIE AND MACHINE SHOP INSTITUTE

A National Trade Association
among whose purposes are:

To develop and preserve, through cooperation and mutual education, sound business policies and profitable shop practices within the Industry, and fair and progressive relations with other industries,

and

To promote on the part of the buyers of the Industry's products a greater appreciation for the indispensable character of INSTITUTE SHOPS and the place they occupy as a fundamental part of the modern system of industrial production.

OFFICERS

F. S. BLACKALL, JR., President — N. A. WOODWORTH, Vice-President

GEORGE J. HUEBNER, Secretary-Treasurer
Cleveland, Ohio

TRUSTEES

RUDOLPH BERNHARDT, Pres. Federal Tool Corp. Chicago, Ill.	R. J. DUNN, Secy.-Treas. Hartford Special Machinery Co. Hartford, Conn.	ALBERT P. McCULLOCH, Pres. McCulloch Mfg. Co. South Boston, Mass.
F. S. BLACKALL, JR., Pres.-Treas. Taft-Peirce Mfg. Co. Woonsocket, R. I.	ANSON ELDRED, Pres. Milwaukee Press & Machine Co. Milwaukee, Wisconsin	C. R. QUINE, Pres. Akron Equipment Co. Akron, Ohio
W. D. BROWN, Vice-Pres. Reynolds Engineering Co. Rock Island, Illinois	GEORGE M. KOCH, Pres. Dienelt & Eisenhardt, Inc. Philadelphia, Pa.	C. C. RICHARD, Pres. Allied Products Corp. Detroit, Mich.
HANS BUERK, Pres. Buerk Tool Works Buffalo, N. Y.	J. J. KOHL, Pres. International Tool Co. Dayton, Ohio	GEORGE S. ROSBOROUGH, Pres. The Measuregraph Co. St. Louis, Mo.
SIDNEY DIAMANT, Pres. Diamant Tool & Mfg. Co. Newark, N. J.	J. L. LYONS, Pres. Lyons Machine Co. Cleveland, O.	N. A. WOODWORTH, Pres.-G. M. Ex-Cell-O Aircraft & Tool Corp. Detroit, Mich.

INSTITUTE DUES

PROGRESS *has a double duty to perform:*

1—To favorably present our Industry to the buyers and users of our products, and

2—To assist in bringing about better conditions within our Industry.

A portion of the DUES paid by Industry members is required to publish PROGRESS.

PROMPT PAYMENT is therefore earnestly requested.

$10.00 pays for the balance of 1936.

GEORGE J. HUEBNER
Secretary-Treasurer

Optics in Modern Industrial Measurement

(Continued from page 4)

a column bearing a stage and a microscope carrier. The microscope carrier has a horizontal micrometer movement with a 0.01 mm. or 0.0001 inch reading barrel and corresponding horizontal scale, by which the microscope slide may be traversed over a distance of 50 mm. (2 in.).

In looking through the ocular, a hairline cross appears superimposed on the image of the work. By registering one of the ocular lines on one terminal point on the work and traversing the microscope slide by means of the micrometer screw until the hairline is registered over the second terminal point, the length between the two points is determined from the micrometer.

It goes without saying that surfaces, fractures, contours, and the like, may also be conveniently examined with the instrument. By the provision of a glass center in the stage and a reflector below, the image outline is sharply set off against the light background, and the examination of contours thereby rendered easy and positive.

A more complex device but one of high usefulness in the shop is the new *Toolmakers' Microscope* appearing in Fig. 1. Although the principle of measurement is the same as that just described, the arrangement of the instrument differs in that the microscope remains stationary, while the work is traversed below it on a compound table. In addition, means are provided for comparing the contour of the work either with a standard outline on a templet in the ocular, or by projection on a master drawing.

For measuring lengths and diameters, the instrument is used in combination with a protractor ocular. By turning the ocular disk the dotted-line cross may be registered to any position, and the angle read from a marginal scale appearing in a magnifier on the ocular head. The angle of a thread may be thus measured by registering the templet, and the diameter and lead by moving the compound slides and reading the micrometers.

For the comparison of shapes, the protractor ocular is exchanged against one of a choice of standard dial oculars each containing a templet with a number of thread or radius outlines, of which the one required is registered on the contour of the work. The resultant combined enlarged image may be observed either through the ocular or, by the use of a special projection attachment, on a daylight-observation screen, and the deviations measured with the micrometers. An alternative possibility offered by the projection attachment is that of measurement without a templet ocular, by comparing the image of the work with a 30-times enlarged drawing tacked to the screen.

A number of standard accessories, comprising V-rests and horizontal and vertical centers, are available for holding round work. Parts with flat surfaces may be placed or clamped directly on the table. A photographic attachment for recording measurements is also made.

Especially for Tool and Die Work

HERCULES Pneumatic Grinders find particular favor in Tool and Die shops. Unusually compact, they have nevertheless proven their sturdiness in thousands of shops, on thousands of tasks. Hercules Grinders, made by the Buckeye Portable Tool Company of Dayton, Ohio, are obtainable in all principal cities.

Equipped for General Machine Work

This month's advertisement of the Superior Pattern & Manufacturing Company of Detroit, Michigan, is intended to call special attention to their facilities for doing GENERAL MACHINE WORK. Operating one of the largest wood and metal pattern shops in Michigan, this company has now expanded its facilities into the field of general machine shop practice.

SUPERIOR PATTERN & MFG. CO.

Manufacturers of

Wood and Metal Patterns

Models

●

General Machine Work

INCORPORATED

3280 EAST WOODBRIDGE STREET AT ADAIR

FITZROY 4050 - 4051 - 4052

DETROIT MICHIGAN

"Alnor" Indicating Pyrometers

For every requirement

Inexpensive - accurate - durable

For over 15 years "Alnor" pyrometers have been the choice of thousands of both large and small shops everywhere. Because of their lower price and compact size they are extensively used for indicating temperatures of molten lead, babbit, tin and die cast metals, heat treating furnaces, for flue gas temperatures, and similar service. Also other types of portable and wall pyrometers for every requirement.

Write for Information

ILLINOIS TESTING LABORATORIES, Inc.

421 N. La Salle St. Chicago, Illinois

35 Years Experience

$13 to $36 up

Please mention PROGRESS when writing advertisers.

To Executives of Production Industries:

The Contract Shops listed in this directory are equipped to manufacture TOOLS, DIES and SPECIAL MACHINERY of every description.

Having served the DIVERSIFIED industries of Cleveland and Ohio for many years, we feel justified in claiming that our management and operating personnel are particularly qualified to turn out GOOD tools at most reasonable prices.

We call attention to the specialties which are listed, and respectfully request the opportunity to submit figures on all types of equipment used by your industries.

E. P. HAHN, *Secretary.*

Northern Ohio Division,
SPECIAL TOOL, DIE & MACHINE SHOP INSTITUTE

Directory of Special Tool, Die and Machine Manufacturers of Cleveland

BARTH STAMPING AND MACHINE WORKS
3815 West 34th St. SHadyside 1857
G. A. BARTH, M.E. T. A. BARTH, Sales
J. J. BARTH, Mgr. J. A. BARTH, Supt.
DIE AND STAMPING ENGINEERS
Precision Tools, Dies, Jigs
SPECIAL MACHINERY

CLEVELAND UNIVERSAL JIG CO.
13404 St. Clair Ave. MUlberry 3322
Designers and Builders
Jigs, Fixtures and Special Machines
Complete Plant Routing and Tooling
Production Engineering

THE BUNELL MACHINE & TOOL CO.
1680 East 24th St. PRospect 2681
Designers and Manufacturers
Tools, Gauges, Jigs, Dies
Special Machinery

THE DICKEY-GRABLER CO.
10302 Madison Ave. N.W. WOodbine 4172
Metal Stampings
Marking Devices
Dies

Please mention **PROGRESS** when writing advertisers.

Directory of Special Tool, Die and Machine Manufacturers of Cleveland

HAHN MANUFACTURING CO.

5332 Hamilton Ave. ENdicott 2205

E. P. HAHN, Pres. M. W. HART, Supt.

Dies, Tools, Fixtures

Special Machines

EQUIPPED FOR MEDIUM AND HEAVY TYPE WORK

H & P MFG. COMPANY

1635 East 55th St. HEnderson 4218

DESIGNERS AND BUILDERS

Dies and Tools

Stampings

General Machine Work

THE INDUSTRIAL MACHINE COMPANY

Founded in 1903

1436 East 47th Street

HARLEY L. FREEMAN, *Pres.* L. H. FREEMAN, *Secy-Treas.*

Builders of Special Machinery

General Machine Work

KINZIG TOOL COMPANY

1243 West 3d St. MAin 6339

C. H. KINZIG, *Mgr.*

Tools, Dies, Special Machinery

Specializing in Welded Constructed Tools

LYONS MACHINE COMPANY

5601 Tillman Ave. WOodbine 2440-2441

JOS. H. LYONS, *Pres.* JACK L. LYONS, *M.E.*

Manufacturers Special Machinery

Tools, Jigs, Fixtures

Firthite Sintered Carbide Tools

SWISS JIG BORING

THE McKINNEY TOOL & MFG. CO.

1688 Arabella Rd. KEnmore 1681

Roller Die Forming Machines

Automatic Saw and Shear Cut-off Machines

DIE CASTING MACHINES

Special Machinery

Dies, Jigs and Fixtures

THE MAURICE MEYER CO.

1934 St. Clair Ave. PRos. 0849-0850

DESIGNERS AND BUILDERS

Jigs and Fixtures

Special Machinery

Experimental and Model Work

MODERN TOOL & DIE CO.

1051 Power Ave. CHerry 7440

Whitney Power Bldg.

DESIGNERS AND BUILDERS

Tools and Dies for Production

Special Machinery

Stampings

OHIO TOOL COMPANY

3160 West 106th St. CLearwater 3200

L. E. Butzman, *Prop.* E. Heller, *Tool Eng.* B.M. Rounds, *Supt.*

DESIGNERS AND BUILDERS

Tools, Dies, Jigs, Fixtures

Special Machinery

THE PARAMOUNT TOOL CO.

1392-98 East 43d St. ENdicott 2220

F. A. SCHMALZ E. H. SCHMALZ

Jigs, Fixtures, Dies

Experimental Work

Please mention PROGRESS when writing advertisers.

Directory of Special Tool, Die and Machine Manufacturers of Cleveland

THE PHOENIX ICE MACHINE CO.

2711 Church Ave. CHerry 1048

F. W. SEBELIN H. E. BOLLINGER

General Machine Work

Designers and Builders of Special Machinery

WM. PLOTZ MACHINE & FORGE CO.

1417 St. Clair N.E. PRospect 0441

OSCAR A. PLOTZ GEORGE T. PLOTZ

General Machine Work

Special Machinery and Parts

Forgings of All Kinds

PROGRESSIVE MACHINE & TOOL CO.

109 Fountain Court MAin 3171

A. J. ORINSKI

Jigs, Fixtures

Special Machinery

A. P. SCHRANER & COMPANY

3338 Payne Ave. HEnderson 8644

WALTER F. EGGER, *Supt.*

External Cylindrical Lapping Machines, Special Machinery

Tools, Dies, Jigs, Fixtures

THE SOMMER & ADAMS COMPANY

18511 Euclid Ave. KEnmore 0810-0811

Since 1907

DESIGNERS AND BUILDERS

Special Machinery

Tools, Jigs and Fixtures

Star Machine & Tool Co.

Established 1903

9320 Woodland Ave. GArfield 2060

J. C. SCHURGER

Designers and Builders

SMALL AND LARGE

Dies, Jigs, Fixtures, Gauges

Precision Production Machine Work

Small and Medium Stampings

TOOLS & GAGES, Inc.

3106 East 63d St. MIchigan 7230

W. L. WARRANDER J. A. SALZER

"Let us be your tool room."

DESIGNERS AND BUILDERS

Tools, Gages, Dies, Jigs Fixtures, Special Machinery

The Trundle Engineering Co.

1501 Euclid Avenue MAin 0250

" ENGINEERS

Designers and Builders

Special Machinery, Tools and Fixtures and Products

Research and Testing of Products

Development and Inventions

THE J. C. ULMER COMPANY

1791 East 38th St. HEnderson 4601

J. J. FEDERKIEL, *Mgr.* R. KIFFER, *Supt.*

Tools, Dies, Jigs, Fixtures

Special Machinery

DESIGNING AND BUILDING

Experimental, Model, Punch Press and Screw Machine Work

THE VARIETY MACHINE & STAMPING CO.

4383 West 35th St. SHadyside 4422-4423

O. KERNSPECHT, *Pres.* J. SVEC, *Supt.*

DESIGNERS AND MANUFACTURERS

Dies and Metal Stampings

We are equipped to make dies and stampings in production up to 250 tons capacity.

Please mention PROGRESS when writing advertisers.

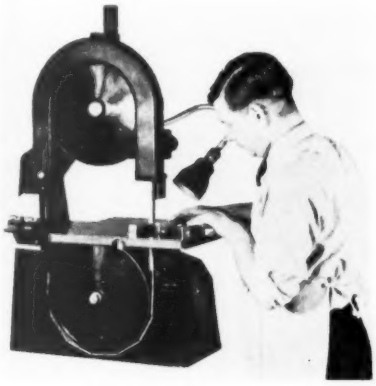
A New Do-All at a Popular Price

A new low-priced bench-model DO-ALL Continuous Sawing and Filing Machine is now available for smaller shops.

Developed by the Continental Machine Specialties, Inc., 1301 Washington Avenue South, Minneapolis, Minnesota, this smaller companion of the big DO-ALL uses the same file bands, the same emery cloth bands and the same saws that are used in the heavy-duty model. It has a built-in ¼ HP motor with geared-head reduction transmission and operates at a constant speed of 140 feet per minute which is effective for sawing and filing ordinary tool steels and for all low-carbon steel. The rigid one-piece frame provides the machine with a 12″ throat which in turn allows a 6″ maximum thickness of work capacity.

The illustration of this model again emphasizes the entirely different sawing principle which the DO-ALL uses. The usual widths of the special saw blades are ⅜″ and ⅛″—but recently a blade has been perfected which is only 3/32″ wide, and the cost of which is about eight cents per lineal foot.

The price of this latest model DO-ALL should place it within the means of most Tool and Die shops.



CARTER DIAMOND TOOL CO.

24-Hour Service

IMPORTERS AND CUTTERS

Specializing in Elongated Brazilian and Bortz Diamonds which do not require resetting.

1390 East 40th Street **Cleveland, Ohio**

Please send blueprints or specifications for special tool requirements.

The Geo. H. Porter Steel Treating Co.

Heat Treating — *Carbonizing*

Annealing — *Case Hardening*

TOOL WORK OUR SPECIALTY

1225 Marquette St. **Tel. HEnderson 6601**

CLEVELAND, OHIO

Danly Standardizes Die Set Clamps

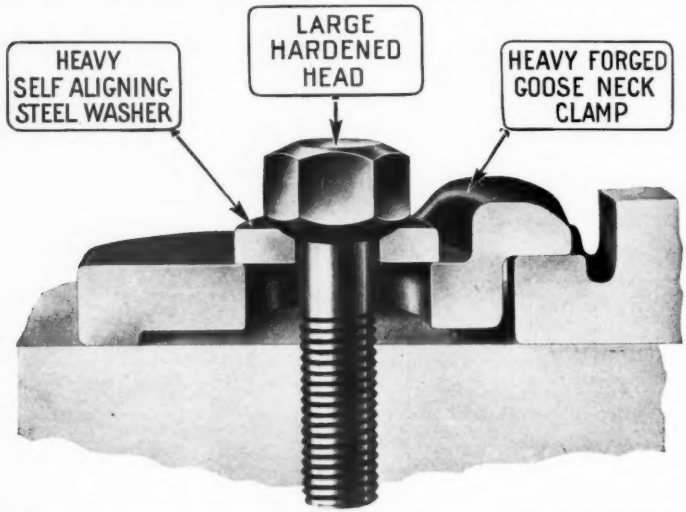
ANOTHER good example of the value to the tool room and press room of standardization of die makers' supplies is the Danly standard clamp. This gooseneck clamp and Danly swivel head cap screws and swivel washers make a most advantageous combination for clamping die sets to the bed of the press.

By means of the gooseneck and the swivel feature of the cap screws and washers, the complete clamp, while holding the die set firmly in place, is always below the level of the die set. It is completely out of the way of the work. These clamps are very easy to handle as the swivel feature centers the cap screw and washer automatically in the desired position.

The Danly clamps are made of heavy, steel forgings, are made so that the clamping screw is brought close to the clamped object. Danly swivel head cap screws are made to U.S.S. nut size for large clamping surfaces and are hardened to stand rough wrench usage. The body of the cap screw is soft and can be cut to any desired length.

Danly swivel washers are made of steel and are extra heavy with a ball seat, large in diameter so as to stand the die shoe slots and heavy enough so as not to dish under heavy strains.

By the use of standard die sets, combined with the standard clamp, it is possible for the press room to standardize on this type of clamp for the regular run of work, ending all question about the clamping of the die set and holding it firmly in position so that the accurate dies will be given every opportunity to produce the best work and last longer between grindings.



Tool and Die Hardening a Specialty

Tool and Die manufacturers in Ohio will be interested in the particular attention which the Geo. H. Porter Steel Treating Company of Cleveland gives TOOL and DIE hardening. TOOL WORK is the Company's specialty.

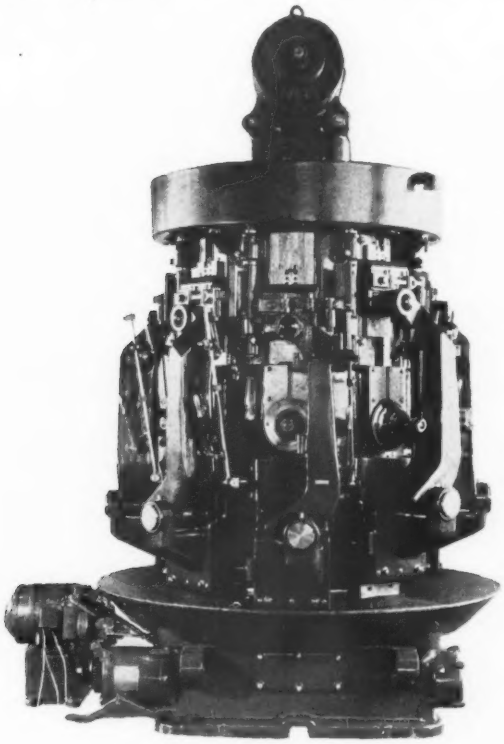
100 Years of File-making

Heller Bros., manufacturers of "NU-CUT" patented files, have been making files for 100 years. The White Tool & Supply Company of Cleveland, Ohio, their distributors, claim that this should qualify them to know the requirements of all lines of industry.

Please mention PROGRESS when writing advertisers.

EIGHT-SPINDLE CONTINUOUS MILLING MACHINE

Tooled for Milling Key-Ways in Automobile Axles



Adaptable to Many Other Production-Milling Operations.
Capacity up to 2000 Pieces Per Hour.
Get Our Production Estimate on Your Milling Operations.

The Sommer & Adams Company

Exceptional facilities for designing and building Special Production Machinery.

TOOLS ● JIGS ● FIXTURES

18511 Euclid Avenue — Cleveland, Ohio

Detroit Representative — John E. Livingstone & Company, 2921 East Grand Boulevard

Please mention PROGRESS when writing advertisers.

PROGRESS Acknowledges With Thanks

From J. F. Ahearn, Manager, Universal Instruments & Metal Co., Inc., Binghamton, New York:

"I have just finished reading your editorial in the March issue of PROGRESS entitled, 'Does the Average Tool and Die Shop Receive an Adequate Profit?'

"This is the first time to my knowledge a frank expression has appeared on the pages of PROGRESS on the so-called business methods of our industry . . .

"An inspiration to write to you came to me after chancing to run across the article I mentioned and which is well worth reading by all concerned."

From Frederick S. Blackall, Jr., president and treasurer of The Taft-Peirce Manufacturing Company, Woonsocket, Rhode Island:

"I have just received the April issue of PROGRESS and wish to congratulate you on the splendid job which you have done.

"All good wishes to you in putting this across in a big way."

From J. J. Kohl, president of The International Tool Company, Dayton, Ohio:

"It appears to me that what the Cleveland group did may be worth while and may do them good. I do not see that it can do any harm to the Industry inasmuch as any publicizing calling attention to the facilities of our Industry should help to make the prospective purchasers of our Industry's products more appreciative of what can be done for them.

". . . . You certainly have my best wishes in your endeavors."

From Louis F. Poock, general manager of the Cimatool Company, Dayton, Ohio:

"I want to thank you for your letter of April 29, as well as congratulate you on the progress you have made in this connection (PROGRESS—April issue)."

PENCILS

- **You use pencils**
- **Your customers use pencils**
- **Everyone uses pencils**

Advertise...

Your Business with Pencils

A GET-ACQUAINTED

SPECIAL

for...

"PROGRESS" readers

1000

. . . . Fancy Gilt Tip Pencils with Red Eraser, Cream Enamel Finish, Round or Hexagon, Perfectly Printed with Your Name, Address and Advertising Copy—1 or 2 colors . . .

$25.00

500—$15.00 **250—$9.00**

PRINT-CESS PENCILS

CLEVELAND, OHIO

Mail Order Division -- P. O. Box 3513

The Print-cess Line is complete—

All Styles—business, golf, bridge, tally.

All Shapes—round, hexagon, square, flat, triangular.

Novelties—nail, spike, cigarette, bullet, dial pencils.

Mechanical Pencils — Penholders.

Please let us quote on your requirements.